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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/393,752	09/10/1999	RAM DANTU	135544	3240

24587 7590 10/10/2002

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INTELLECTUAL PROPERTY DEPARTMENT
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EXAMINER
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ART UNIT	PAPER NUMBER
2697	

DATE MAILED: 10/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/393,752	Applicant(s) DANTU ET AL.	
	Examiner Michael E Robustelli	Art Unit 2697	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on ____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5)☐ Claim(s) ____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) ____ is/are objected to.

8)☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 1999* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on ____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. ____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). ____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 110. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The disclosure is objected to because of the following informalities:

   i. On page 33, lines 9-10, it reads "504A and 504B are for storing information regarding network conditions and forwarding tables, respectively." This is not consistent with the details on figure 5 of the drawings. Also on page 33, line 14, 504B is referred to in the same inconsistent manner.

   ii. On page 39, line 27, the example refers to figure 6 and node 616, but, on page 40, line 8, refers to the same node as 340. These references are not consistent.

3. Appropriate corrections are required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-5, 7-8 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu (USP 5,815,490) in view of Williamson (USP 5,572,515).

Regarding claims 1-5, 7-8 and 26, Lu teaches the network node configuration, of an optical network (SONET or SDH), comprising a processor (See CPU, page 7, lines 42-44), interface (See high speed function blocks, page 7, lines 11-19) and storage device (See memory/interface unit, page 7, lines 51-54). The storage device is capable of receiving and processing overhead signals (See page 7, lines 49-51). Lu's method also teaches of a node capable of recognizing line failures, an example of which would be a cut in fiber (See page 2, lines 52-54). When a failure is detected an overhead signal is generated that indicates a failed link (Page 8, line 47-50).

Lu does not provide a method for a node that signals a node failure is detected in an adjacent node within 15 ms. Also, Lu does not propose a method for detecting failures on multiple system layers (OSI).

Williamson provides a system in which failures occurring on multiple OSI layers (1-3) can be detected (See pages 2, line 59; and 3, lines 2-4 and 11-13).

At the time of invention it would have been obvious to a person of ordinary skill in the art to use a node that signals the failure of adjacent node, and to do this within 15 ms. It would have also been obvious to one skilled in the art at the time of invention to recognize failures on different OSI levels.

One of ordinary skill in the art would have been motivated to respond within 15 ms because a quick response is desirable to prevent network downtime. Additionally, one would be motivated to recognize failures on different OSI levels in order to increase system recovery capabilities.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu (USP 5,815,490) in view of Williamson (USP 5,572,515) and in further view of Vaman (USP 6,426,941).

Referring to claim 6, Lu and Williamson, as discussed in the rejection of claim 5 above, differ from claim 6 in that Lu and Williamson does not discuss node that signals failure conditions that include traffic congestion exceeding specified threshold.

Vaman teaches of node (entity) that detects congestion exceeding specified threshold (unacceptable level) and then generates a signal indicating this condition has occurred (Page 5, lines 25-54).

At the time of invention it would have been obvious to a person of ordinary skill in the art to include traffic congestion as failure condition for a fiber optic ring node.

One of ordinary skill in the art would have been motivated to do this because it would allow network nodes to update their routing tables so that packets could be transmitted on non-congested protection paths.

7. Claims 9-10, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando (USP 6,359,860) in view of Elahmadi (USP 6,292,464).

Regarding claims 9-10, 13 and 16, Ando teaches the method of a ring network node that can provide path restoration and containing a processor, interface coupled to the processor (See fault detector, figure 2) and storage device. A processor regulates path restoration by accessing the storage device for information ring conditions, i.e. network node faults (See claim 11).

Ando's invention differs from the claim in that it is not specified as being a fiber optic ring; also it does not perform on a "packet by packet basis," or operate within a specified time.

Regarding Claims 9-10, 13 and 16, Elahmadi teaches the method of network node, capable of reading the destination of each signal (packet), comparing it to ring tables for network conditions and then transmitting it along an appropriate path (See page 4, lines 27-41).

Regarding claims 10 and 13, the ring network design is a fiber optic ring, which Elahmadi states could be one of any type of fiber optic ring, specifically citing a SONET ring as an example (See page 4, lines 45-48).

At the time of invention it would have been obvious to a person of ordinary skill in the art to create a network node capable of routing each packet based on network conditions. It would have been obvious to one skilled in the art to do this on fiber optic network, either SONET or SDH. Additionally, having a specified time of completion of no more then 35 ms would also have been obvious at the time of invention to a person of ordinary skill in the art.

One of ordinary skill in the art would have been motivated to combine these aspects because fiber optic networks are very widely used and capable of fast transmission of data. More specifically SONET and SDH fiber optic networks are the standard networks used throughout North America and Europe, respectively. Also, accomplishing switching on a packet-by-packet basis would be the most effective means of assuring error free transmission paths for each packet. One would also be motivated to Provide restoration within a specified time, and that specified time being less then 35 ms because quick fault recovery increases the overall efficiency and throughput of a system by decreasing downtimes.

8. Claims 11-12 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando (USP 6,359,860) in view of Elahmadi (USP 6,292,464), and in further view of Lu (USP 5,815,490).

Referring to claims 11-12 and 14-15, Ando in view of Elahmadi, as discussed in the rejection of claim 9 above, differs from claims 11-12 and 14-15 in that Ando in view of Elahmadi does not discuss and overhead signal indicating node failure or a K1/K2 overhead signal indicating node failure.

Lu teaches of ring status data field (indication of node failures) in the K1 and K2 bytes of the overhead (See page 8, lines 47-50).

At the time of invention it would have been obvious to a person of ordinary skill in the art to include ring condition data in the overhead signaling between network nodes.

One of ordinary skill in the art would have been motivated to do this because it would provide the nodes with the information necessary to update the stored device (memory) of ring conditions.

9. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bremer (USP 6,032,190).

Regarding claims 17-20, Bremer teaches of a network apparatus in which each an incoming packet has its header removed, reformatted and replaced (See page 12, lines 8-16). The apparatus then routes the packet

through one of a plurality of paths based on the new header values (See page 4, lines 13-17).

Bremer's invention specifies it has the capacity of handling packets of different formats in addition to interfacing with different transport mediums, including fiber optic networks (SONET, See page 4, lines 46-47). Therefore, Bremer's invention anticipates all the functions of the fiber optic ring network node claimed.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bremer (USP 6,032,190) in view of Merli (USP 6,088,141).

Referring to claim 21, Bremer, as discussed in the rejection of claim 17 above, differs from claim 21 in that Bremer does not discuss a device that can route traffic to an external device.

Merli teaches the method of using switch that can drop signals destined for it (See page 5, lines 6-7), and convert the optical signals into electrical ones. The converted signals are then sent to the receiver of an external device (line unit) coupled to the switch.

At the time of invention it would have been obvious to a person of ordinary skill in the art to include the capability of performing this step, as it is common practice and necessary, to completely deliver selected data to its final destination

One of ordinary skill in the art would have been motivated to do this so that the final delivery of data from source to destination could be realized.

11. Claims 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bremer (USP 6,032,190) in view of Merli (USP 6,088,141), and in further view of Christie (USP 6,430,176)

Referring to claim 22, Bremer in view of Merli and in further view of someone, as discussed in the rejection of claim 21 above, differs from claim 22 in that Bremer in view of Merli and in further view of someone, does not discuss converting data of TDM format to one of IP format.

Christie teaches of a method for converting TDM format to IP format and vice versa.

At the time of invention it would have been obvious to a person of ordinary skill in the art to convert data packets of TDM format to IP format (Page 10, lines 47-48).

One of ordinary skill in the art would have been motivated to do this because it would allow a circuit switched network to interface with a packet switched network.

12. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bremer (USP 6,032,190) in view Merli (USP 6,088,141), and in further view Christie (USP 6,430,176) and De Moer (USP 6,147,968).

Referring to claim 23, Bremer in view of Merli and in further view of Christie, as discussed in the rejection of claim 21 above, differs from claim 23 in that Bremer in view of Merli and in further view of Christie, does not discuss converting multiple data packets of TDM format to one packet of IP format.

De Moer teaches of a data packet that contains multiple independent data packets (elements, Page 8, 40-44).

At the time of invention it would have been obvious to a person of ordinary skill in the art to include multiple data packets (elements) of TDM format in one IP formatted packet.

One of ordinary skill in the art would have been motivated to do this because it would allow a circuit switched network to interface with a packet switched network. Additionally, it would allow one IP formatted packet to carry TDM traffic destined for multiple destinations.

13. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bremer (USP 6,032,190) in view of Merli (USP 6,088,141), and in further view of Ellis (USP 6,256,292).

Referring to claims 24-25, Bremer and Merli, as discussed in the rejection of claim 21 above, differs from claim 24-25 in that Bremer and Merli does not discuss a device that can route traffic to an external device by either analysis of a forwarding table or a header.

Ellis teaches the method of a step in a network node where the cell control unit determines whether or not to drop the cell (output to external device) by examining the header and then referring to a routing table (See page 14, lines 41-46).

At the time of invention it would have been obvious to a person of ordinary skill in the art to determine to output the data packet to an external device according to an entry in a forwarding table and an address in the header.

One of ordinary skill in the art would have been motivated to do this because a forwarding table contains information on the next path through the network a packet must take to reach its destination. If the packet has already reached its destination node, then it would be apparent that the forwarding table should indicate this.

14. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu (USP 5,815,490) in view of Williamson (USP 5,572,515), and in further view of Ikeda (USP 6,144,633).

Referring to claim 27, Lu and Williamson, as discussed in the rejection of claim 26 above, differs from claim 27 in that Lu and Williamson does not discuss and error signal transmitted on a protection path if a failure condition is downstream.

Ikeda teaches of a node that detects a failure in adjacent nodes, and transmits and receives error signals (failure information) with other nodes along a protection path (Claim 32).

At the time of invention it would have been obvious to a person of ordinary skill in the art to transmit error signals along a protection line

One of ordinary skill in the art would have been motivated to do this because in a unidirectional path the working path would no longer be capable of carrying information downstream if an error was detected down that path. Therefore, an alternate path is necessary to convey error signals to other nodes.

15. Claim 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu (USP 5,815,490) in view of Williamson (USP 5,572,515), and in further view of Miyagi (USP 5,461,607).

Referring to claim 28, Lu and Williamson, as discussed in the rejection of claim 26 above, differs from claim 28 in that Lu and Williamson does not discuss a error signal on a working if the failure condition is upstream.

Miyagi teaches of an error signal transmitted on a working path if a node failure occurs upstream (Page 1, lines 45-62, and Fig.7).

At the time of invention it would have been obvious to a person of ordinary skill in the art to transmit error signals on a working path if a failure has occurred upstream.

One of ordinary skill in the art would have been motivated to do this because if a failure occurs upstream, downstream nodes will expect incoming signals on the working path.

16. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Elahmadi (USP 6,292,464) in view of Bremer (USP 6,032,190).

Elahmadi teaches the method of network node that updates its ring tables based on detected network conditions. It forwards incoming signals along an appropriate path (See page 4, lines 27-41). The ring network design is a fiber optic ring, which Elahmadi states could be one of any type of fiber optic ring, specifically citing a SONET ring as an example (See page 4, lines 45-48).

Elahmadi does not each of a method of setting a label for a data packet, in which the label defines a path for that data packet.

Bremer does teach of a network apparatus in which each an incoming packet has its header removed, examined, reformatted and replaced (See page 12, lines 8-16). The apparatus then routes the packet

towards its destination based on a new label (internal header) values (See page 4, lines 13-17).

At the time of invention it would have been obvious to a person of ordinary skill in the art to update the forwarding/routing tables based on detected errors in a network node that routes data packets based on a header label that is determined from the routing table.

One of ordinary skill in the art would have been motivated to do this because data packets would automatically be forwarded on error free paths.

17. Claim 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elahmadi (USP 6,292,464) in view of Bremer (USP 6,032,190), and in further view of Ikeda (USP 6,144,633).

Referring to claims 30 and 31, Elahmadi and Bremer, as discussed in the rejection of claim 29 above, differs from claims 30 and 31 in that Elahmadi and Bremer does not discuss the steps of receiving a signal indicating node failures and detecting a condition in an adjacent link.

Ikeda teaches of a node that detects a failure in adjacent nodes, and transmits and receives failure information with other nodes (Claim 32).

At the time of invention it would have been obvious to a person of ordinary skill in the art to include the steps of receiving signals identifying conditions and detecting conditions of adjacent nodes.

One of ordinary skill in the art would have been motivated to do this because it would update ring tables of effected down stream nodes of network conditions, such as path failures. This would allow re-routing of traffic through operational paths to take place.

18. Claims 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiomoto (USP 6,324,175) in view of Tappan (USP 6,295,296)

Shiomoto teaches of a STM network in which IP packets are received and converted so that they are compatible with the network. The converted packets are then routed though one of a plurality of routes (Figure 6). The formatted packet contains a data and header portion (Page 7, lines 9-18).

Shiomoto does not teach of a header value in a packet that indicates particular path route.

Tappan teaches of label portion of a header that indicates a particular path route for the data packet (Page 5, line 50, to Page 6, line 12; Figures 4 and 5).

At the time of invention it would have been obvious to a person of ordinary skill in the art to forward the data through one of a plurality of paths based on the header values.

One of ordinary skill in the art would have been motivated to do this because it would reduce the attention each individual node processor

would have to dedicate to determining the route of each incoming data packet.

19. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiomoto (USP 6,324,175) in view Tappan (USP 6,295,296) in further view of Anderson (USP 6,263,443).

Referring to claims 33 and 34, Shiomoto and Tappan, as discussed in the rejection of claim 32 above, differs from claims 33 and 34 in that Shiomoto and Tappan does not discuss a header that contains a quality of service field, which is used in a step to determine whether and when to forward data.

Anderson teaches of a header portion that indicates a quality of service rating (Page 5, lines 58-60). This QOS rating is used to decide whether and when to forward the packet (Page 3, lines 38-44).

At the time of invention it would have been obvious to a person of ordinary skill in the art to include a quality of service

One of ordinary skill in the art would have been motivated to do this because it permits prioritization of incoming signals. This feature could be used to accommodate traffic of different types including video, telephony and data. Giving time-sensitive traffic such as real-time video and voice a higher quality of service rating.

20. Claim 35 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tappan (USP 6,295,296) in view of Anderson (USP 6,263,443).

Regarding claims 35 and 38, Tappan teaches of a signal format including a data portion (IP data) and an address portion, defining a destination address. Tappan also teaches of a label portion for defining a path route along the network (Page 5, line 50, to Page 6, line 12; Figures 4 and 5).

However, Tappan does not teach of the path being through a fiber optic ring network.

Anderson teaches of a fiber optic ring (high speed transmission system; uses SONET as example) in which packets are forwarded (Page 1, lines 5-6).

Regarding claim 38, Anderson also teaches of a signal format that includes a label value indicating a QOS rating for the packet (Page 3, 26-27).

At the time of invention it would have been obvious to a person of ordinary skill in the art to route data packets through a fiber optic ring network, and also to give teach packet a QOS rating.

One of ordinary skill in the art would have been motivated to do this because fiber optic ring networks have very large capacity for information. This large bandwidth could be used to accommodate traffic

of different types including video, telephony and data. One would then be motivated to include a QOS label value to give time-sensitive traffic such as real-time video and voice a higher quality of service rating.

21. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tappan (USP 6,295,296) in view of Anderson (USP 6,263,443), in further view of Lu (USP 5,815,490)

Referring to claim 36, Tappan and Anderson, as discussed in the rejection of claim 35 above, differs from claim 36 in that Tappan and Anderson does not teach of the label value identifying a path route on the protection path.

Lu teaches of a label value that indicates a whether the ring is on a working path (normal non-switching) or a protection path (switching, Page 8, lines 50-53)

At the time of invention it would have been obvious to a person of ordinary skill in the art to include a label value in a packet indicating the packets path route is on a protection path.

One of ordinary skill in the art would have been motivated to do this because it would allow a packet to be switched onto an operational path in the event of a failure in the primary path.

22. Claim 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Tappan (USP 6,295,296) in view of Anderson (USP 6,263,443), in further view of Tsuchiya (USP 5,353,283).

Referring to claim 37, Tappan and Anderson, as discussed in the rejection of claim 35 above, differs from claim 37 in that Tappan and Anderson does not teach of a label value that identifies the bandwidth of the channel used to conduct the signal.

Tsuchiya teaches of a label in value that identifies the bandwidth of the channel used to conduct the signal (Page 10, lines 2-10).

At the time of invention it would have been obvious to a person of ordinary skill in the art to have a label value field that indicates bandwidth requirements of a packet.

One of ordinary skill in the art would have been motivated to do this because it would allow users who require a greater bandwidth for their transmissions to have it. This would help alleviate congestion and increase overall system throughput.

23. Claim 39 rejected under 35 U.S.C. 103(a) as being unpatentable over Tappan (USP 6,295,296) in view of Anderson (USP 6,263,443), in further view of Bray (USP 5,487,061).

Referring to claim 39, Tappan and Anderson, as discussed in the rejection of claim 35 above, differs from claim 39 in that Tappan and

Anderson does not teach of a label value that specifies a signal type and source to be given a higher priority.

Bray teaches of a label value that specifies signal types and sources to be given high priority (Page 2, lines 8-11).

At the time of invention it would have been obvious to a person of ordinary skill in the art to include a label value giving higher priority to particular signal types and sources.

One of ordinary skill in the art would have been motivated to do this because it would allow time-sensitive traffic such as voice and video to be routed along with non-time-sensitive data traffic.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael E Robustelli whose telephone number is 703-305-8326. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy D Vu can be reached on (703)308-6602. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

Michael Robustelli
October 4, 2002

ALPUS H. HSU
PRIMARY EXAMINER